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MOVERS

Steven Salzberg, director, Center for Bioinformatics and Computational Biology, College Park, Maryland

1998–2005: Senior director of bioinformatics, The Institute for Genomic Research, Rockville, Maryland
1999–2005: Research professor, Department of Computer Science, joint appointment in the Department of Biology, Johns Hopkins University, Baltimore, Maryland

Steven Salzberg is a big-picture biologist trapped in a computer scientist's body.

As a graduate student in computer science at Harvard University, he read about this new thing called the Human Genome Project. Convinced that this would be where the action was for some time to come, he attended biology classes and read textbooks to get up to speed on the unfamiliar vernacular of biology. As an assistant professor at Johns Hopkins University, he started working on computational techniques for understanding DNA.

But, says Salzberg, coming to The Institute for Genomics Research (TIGR) in Rockville, Maryland, was his most pivotal career move because it was here that he became truly immersed in genomics. Most importantly, he became aware of problems that his colleagues experienced on a daily basis that he could address through his work.

Since his arrival, his TIGR research group has developed 20 major systems to assist in locating genes, genome assembly and sequence alignment. His efforts have helped to bring bioinformatics to the fore of genomics research. He has made all of the programs open-source and thus freely available on the web. "If I make it open source, others can use that and the field moves ahead faster," he explains.

In the past, he says, learning enough molecular biology to be effective in bioinformatics was his most daunting task. But turning the new Center for Bioinformatics and Computational Biology at the University of Maryland into a world-class centre is his next big career challenge. He will take over as its director in July and is keen to ensure that bioinformatics stays closely tied to genomics. "Sequencing centres are churning out genomes at an incredible rate, so comparative genomics will be an active area for some time to come," he says.

To have the most impact, Salzberg encourages his graduate students to tackle projects that a lot of people care about. He eschews work based solely on the current technological challenges in computer science. "I discourage my students from working on problems that only 50 other people in the world understand," he says.

And, not surprisingly, he presses his students to seek answers through collaborations with scientists in other disciplines. When it comes to unlocking secrets buried deep in genomes and revealing evolutionary lineages through comparative genomics, this computer scientist is adamant that to blaze a trail you need a blatant disregard for disciplinary boundaries. ■

RECRUITERS & ACADEMIA

Beware the undiscovered genius

At Cornell University, a tenured professor once lodged a formal complaint saying that he had been denied a pay rise for five years. He had not published for a decade, choosing instead to translate and interpret a single stanza of classical literature. He declared himself an undiscovered genius whose magnum opus would be ready for publication and evaluation at the end of his career.

True, brilliant works take time. But can a department function like this? Should it reward everyone, assuming that those who do not have finished products are 'still at it' and deserve as much status and compensation as the continually productive?

Performance evaluation is a central issue in academia, and is the crux of hiring, tenure, promotion and pay decisions. If it is done badly, the best people flee — under-compensated and promoted late — while people with less ability soak up resources.

How evaluations are done varies widely. Some administrators stress publishing in certain peer-reviewed journals or books; others emphasize large grants; some reward teaching large courses with high ratings; others seek national service, awards and fellowship status in prestigious professional organizations. Too much depends on a haphazard, unreliable and inadequately monitored system, particularly for evaluating scholarship.

Empirical research suggests two guiding principles: the best predictor of future performance is past performance; and high impact is associated with high productivity. For the high-productivity researcher, each publication is cited more, as is the person's work as a whole; the individual receives more career awards; the published work is better recognized with awards — all indicators of peer recognition. Not all prolific work is good work, but the relationship between productivity and quality exists across most fields of scholarship.

In practical terms, a historically unproductive professor given extra departmental resources usually remains unproductive. Conversely, a formerly productive professor suffering a setback will again be productive. Bad hiring decisions cannot be made good by dumping more resources on under-performing scientists to galvanize their productivity. Administrators must not be seduced by claims of undiscovered genius or of insufficient time and resources. The message from empirical research is clear: beware the undiscovered genius. ■

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GRADUATE JOURNAL

Breaking the ice

When I finished my MSc studies, my supervisor asked me to present my results at a poster session during an international conference. As I don't like to leave things to the last minute, I immediately began my preparations. I had quite a few results, so it took me a while to choose the most important data to highlight. Having completed the poster's abstract, I sent it to the organizers.

Then the meeting's scientific committee asked me to present my findings orally instead. I was surprised, but I naturally agreed — it was a big honour for such an inexperienced and young scientist like me. Then I realized, with a sense of trepidation, that I would have to change my conference status from 'student' to 'speaker', and that the audience would include leaders in my field, not just colleagues my age. This terrified me even more in the run-up to my speech. As I approached the stage, my hands were trembling, I had a dry throat and I was afraid that I would manage only a mumble instead of talking.

Fortunately, everything was fine, and my first conference speech went well. But the experience was a good lesson in how stressful life in science can be. You need to be able control your emotions and hide or fight your nerves. I can now say that being a lecturer is not easier than being a student — even though I and most of my friends have thought that at least once in our lives. ■

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